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## Intracranial tumour in an infant presenting as iron deficiency anaemia

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## SHORT REPORTS

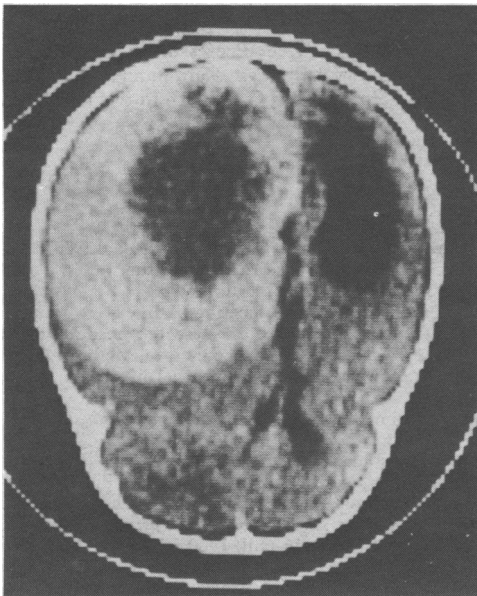
### Intracranial tumour in an infant presenting as iron deficiency anaemia

Anaemia is common in patients with malignant neoplastic disease<sup>1</sup> but is not generally recognised as a complication of brain tumours in the absence of vomiting or anorexia. We report the case of an infant who came to medical attention because of iron deficiency anaemia for which no cause was found until an intracranial neoplasm was diagnosed. The anaemia remained refractory to dietary iron supplements but resolved promptly after excision of the neoplasm.

#### Case report

The patient was admitted to hospital at the age of 10 months for investigation of anaemia. He was born of a full term normal delivery, smiled at 9 weeks, and sat unsupported at 6 months. Over the next four months, however, he became increasingly irritable and apathetic. The general practitioner noted anaemia, and comparison with previous records showed that he had not gained weight since the age of 7 months.

In hospital the child was found to be pale and miserable and his weight (9.4 kg) was just below the 50th centile. Head circumference was 49 cm



Contrast enhanced CT scan showing large tumour in occipital region, extending into temporal and parietal regions. Tumour has well defined edge and necrotic centre, was causing considerable mass effect, and had expanded right side of vault.

(>90th centile), having been 34 cm (>50th centile) at birth, and the fontanelle was wide but slack. This was not considered relevant, as both the mother and her brother had constitutional macrocrania.

Haemoglobin concentration was 6.0 g/dl and red cell indices reflected a microcytic hypochromic anaemia. Extensive haematological studies showed only deficiency of iron. Dietary assessment did not substantiate deficient intake of energy, protein, or iron, while results of three tests for occult blood and parasites in the stool, measurement of faecal fat, intravenous pyelography, and jejunal biopsy were all normal, as was an extensive infection screen. Iron supplements were begun but he failed to respond and did not mount a reticulocyte response. A skull radiograph showed suture diastasis.

At the time of admission to our unit he had been receiving iron supplements for eight weeks but still had a haemoglobin concentration of 6.2 g/dl. Weight was 10 kg, head circumference 50 cm, and there was obvious psychomotor retardation. Computed tomography showed a large, well defined mass with a necrotic centre occupying the posterior two thirds of the right hemisphericum with considerable mass effect (figure). Angiography showed a large mass

with a rich capillary circulation. He underwent craniotomy with complete macroscopic removal of a fibrillary astrocytoma grade 3 weighing 550 g. The only detectable postoperative deficit was left homonymous hemianopia. Haemoglobin concentration began to rise after removal of the tumour and two weeks later was 12.8 g/dl. He underwent a course of radiotherapy, and at six month follow up the haemoglobin concentration was 12 g/dl, mean cell volume 79 fl (79  $\mu\text{m}^3$ ), mean cell haemoglobin 25.1 pg, and mean cell haemoglobin concentration 31.7 g/dl. At 2 years he was thriving and reaching milestones normally.

#### Comment

Anaemia is the most important haematological disorder in malignancy and, while chronic blood loss or infection may sometimes be identified, in up to 60% of cases no clear cause emerges.<sup>1</sup> The incidence of microcytic hypochromic anaemia in one series of patients with malignant disease was only 3%,<sup>2</sup> and its appearance in our patient was presumably due to sequestration of iron in a richly vascularised tumour undergoing central necrosis and representing (at the time of operation) 0.5% of the child's weight and 60% of the expected brain weight. Other causes of anaemia had been excluded by thorough investigation, and formal dietary assessment confirmed adequate intake of iron and protein. The lack of response to iron for eight weeks and resolution of the anaemia after removal of the tumour strongly suggest a causal relation.

The paucity of specific clinical features of brain tumours in infants hampers early diagnosis in many instances<sup>3</sup> and our case shows that anaemia may be one such presentation. This makes CT scanning mandatory when macrocrania is also present in a child with non-neurological symptoms.

We thank Miss Sally Alden for help in preparing this manuscript.

<sup>1</sup> Miller A, Chodos RB, Emerson CP, Ross JF. Studies of the anemia and iron metabolism in cancer. *J Clin Invest* 1956;**35**:1248-52.

<sup>2</sup> Banerjee JRN, Narang RM. Haematological changes in malignancy. *Br J Haematol* 1967;**13**:829-43.

<sup>3</sup> Farwell JR, Dohrmann GJ, Flannery JT. Intracranial neoplasms in infants. *Arch Neurol* 1978;**35**:533-7.

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### Localised visceral immunocytoma associated with serological findings suggesting systemic lupus erythematosus

Immunocytomas are tumours of plasmacytoid origin that have the ability to synthesise immunoglobulins.<sup>1</sup> We describe two patients with the rare association of localised visceral immunocytoma, monoclonal gammopathy, and positive serological findings suggesting systemic lupus erythematosus.

#### Case reports

**Case 1**—A 50 year old woman was admitted because of prolonged fever. Eight years previously pancytopenia had been incidentally discovered, but physical examination at that time had been normal. She was followed up for two years, over which time her haemoglobin concentration was 11-13 g/dl, white cell count  $2.2-3.6 \times 10^9/\text{l}$  (normal differential), and platelet count  $7.5-12.0 \times 10^9/\text{l}$ . Electrophoresis of serum proteins yielded normal results, and serological tests for lupus erythematosus cells, antinuclear antibodies, and anti-DNA antibodies yielded negative results. She had remained